IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Yee Loong Chin *et al.*	)	
	)	Group Art Unit: 2878
Application No.: 10/810,173	)	
	)	Examiner: Livedalen, Brian J.
Filed: March 26, 2004	)	
	)	Confirmation No.: 7995
For: POLAROID ABSOLUTE ENCODER	)	

APPEAL BRIEF UNDER 37 C.F.R. §41.37

Honorable Commissioner for Patents
Alexandria, VA 22313-1450

Sir:

This Appeal Brief under 37 C.F.R. §41.37 is submitted in support of the Notice of Appeal filed August 24, 2007, appealing to the Board from the action of the Examiner's Final Office Action, mailed May 24, 2007, the Advisory Action mailed August 9, 2007, which renewed the rejection, finally rejecting claims 1-22 of the above-referenced application.

I hereby certify that this correspondence is being electronically transmitted to the USPTO via EFS-WEB to: Mail Stop Appeal Brief, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on

Date: October 24, 2007 /Robert A. Blaha/

Signature – Robert A. Blaha

I. REAL PARTY IN INTEREST

The real party in interest of the instant application is Avago Technologies ECBU IP PTE, LTD., having a principal place of business in Fort Collins, Colorado.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

III. STATUS OF THE CLAIMS

Claims 1-22 are pending in the application. Claims 1-22 stand finally rejected under 35 U.S.C. §103(a). Applicants hereby appeal the foregoing final rejection of claims 1-22.

IV. STATUS OF AMENDMENTS

No amendments have been made or requested since the mailing of the FINAL Office Action and all amendments submitted prior to the FINAL action have been entered.

Specifically, a non-final Office Action was mailed on September 28, 2005. A First Response including amendments to claims 1, 9, 14, 15, 17 and 21 was submitted on December 22, 2005. A final Office Action was then mailed from the USPTO on February 6, 2006. A Preliminary Amendment, including amendments to claims 1-3, 5,

6, 8-11, 13, 15-17, 19, 20 and 22 with a Request for Continued Examination was submitted on April 6, 2006. On May 9, 2006, the USPTO mailed a non-final Office Action. Applicants submitted a Response, including amendments to claims 1, 6, 7, 9, 11, 12, 17, 19 and 20, on August 7, 2006. On August 30, 2006, the USPTO mailed a final Office Action. An Amendment and Response (after final), including amendments to independent claims 1, 9 and 17, was submitted on October 30, 2006. On November 29, 2006, the USPTO mailed an Advisory Action. On December 18, 2006, Applicants filed a Preliminary Amendment, including amendments to independent claims 1, 9 and 17, with a Request for Continued Examination. The USPTO mailed a non-final Office Action on February 7, 2007. Applicants submitted a Response, including amendments to claims 1, 9, 13 and 17, on May 7, 2007. On May 24, 2007, the USPTO mailed a Final Office Action. Applicants submitted a Response (after final), with no amendments to the claims, on July 24, 2007. On August 9, 2007, the USPTO mailed an Advisory Action. On August 24, 2007, Applicants submitted a Notice of Appeal.

Accordingly, the claims attached hereto in the Claims Appendix (Section VIII) reflect the claims, as amended, in the Response submitted on May 7, 2007.

V. SUMMARY OF CLAIMED SUBJECT MATTER

A polaroid encoder system for detecting movement is disclosed. The system includes a movable polarizing code element. A detector module detects an amplitude

based on how much illumination passes through one portion of the movable polarizing code element. A quadrant of the movable polarizing code element is determined based on how much illumination passes through another portion of the movable polarizing code element. The angular position of the movable polarizing code element can then be determined by using amplitude and the quadrant information.

Embodiments include a Polaroid encoder system for detecting rotational movement as defined in independent claim 1. Claim 1 recites: a movable polarizing code element comprising a first concentric code, a second concentric code and a set of quadrants, the first and second concentric codes in contact with one another over one of the four quadrants of said movable polarizing code element; a detector module to detect an amplitude based on how much illumination passes through a first portion of said movable polarizing code element, said detector module comprising: a first illumination detector covered with a first static polarizing filter that is oriented in a first direction; a second illumination detector covered with a second static polarizing filter that is oriented in a second direction; a first determination module to identify a quadrant of said movable polarizing code element based on how much illumination passes through a second portion of said movable polarizing code element, the first determination module responsive to a single illumination source that emits light that is directed at and unaltered before encountering the movable polarizing code element and thereafter unaltered before encountering a third illumination detector and a second determination

module coupled to receive said amplitude and said quadrant and configured to determine an angular position of said movable polarizing code element using said amplitude and said quadrant.

The subject matter of independent claim 1 is illustrated in at least FIGs. 3-13 and described in the specification at least in paragraphs 0020 through 0074.

For example, a polaroid encoder system for detecting movement is illustrated in FIGs. 3 and 9-11 in the embodiments of a polaroid absolute encoder system 300, which is described from page 6, line 1 to page 10, line 9 and a moveable polaroid code disk 908, which is described from page 18, line 18 to page 25, line 3 of the specification.

The moveable polaroid code element, illustrated in FIGs. 9 and 10, includes a first concentric code 1002, a second concentric code 1004 and four quadrants labeled with roman numerals I-IV. Also shown in FIGs. 9 and 10 is the relative position of a light beam 904 and light detector module 906. Further illustrated in FIG. 9 are first and second illumination detectors within light detector module 906. A first determination module 308 and a second determination module 310 of the Polaroid absolute encoder system 300 are illustrated in FIG. 3 and described from page 6, line 1 to page 10, line 9.

An alternative embodiment is defined in claim 9, which is directed to a method for determining angular position of a movable polarizing code element. Applicants' claimed method comprises the steps of: illuminating said movable polarizing code element comprising a first concentric code, a second concentric code and a set of

quadrants, the first and second concentric codes in contact with one another over one of the quadrants of said movable polarizing code element, said illuminating comprising an illumination source such that emitted light is directed at and unaltered before encountering the movable polarizing code element and thereafter unaltered before encountering a third illumination detector; detecting a first amplitude based on how much illumination passes through a first portion of said movable polarizing code element and a first static polarizing filter oriented in a first direction, said detecting said first amplitude comprises utilizing a first photodiode; detecting a second amplitude based on how much illumination passes through said first portion of said movable polarizing code element and a second static polarizing filter oriented in a second direction, said detecting said second amplitude comprises utilizing a second photodiode; determining a quadrant of said movable polarizing code element based on how much illumination passes through a second portion of said movable polarizing code element, said determining said quadrant comprises utilizing a third photodiode, wherein said first, second, and third photodiodes are located on one side of said movable polarizing code element; and determining said angular position of said movable polarizing code element using said first amplitude, second amplitude and said quadrant.

The subject matter of independent claim 9 is illustrated in at least FIGs. 3-13 and described in the specification at least in paragraphs 0020 through 0074. For

example, FIGs. 4-7 reveal method steps performed by the moveable polarizing module 400, an illumination amplitude detector module 500, a quadrant determination module 600 and an angular determination module 700, respectively. The method steps associated with the movable polarizing module 400 are described from page 10, line 11 to page 12, line 22 of the specification. Method steps associated with the illumination amplitude detector module 500 are described from page 12, line 24 to page 14, line 18 of the specification. In addition, method steps associated with the quadrant determination module 600 are described from page 14, line 20 to page 16, line 5. Finally, method steps associated with the angular determination module 700 are described from page 16, line 7 to page 17, line 15.

Independent claim 17 is directed to a system for determining angular position of a movable polarizing code element that comprises means for illuminating said movable polarizing code element comprising a first concentric code, a second concentric code and a set of quadrants, the first and second concentric codes in contact with one another over one of the quadrants of said movable polarizing code element, said means for illuminating comprising an illumination source such that emitted light is directed at and unaltered before encountering the movable polarizing code element and thereafter unaltered before encountering a third illumination detector; means for detecting a first amplitude based on how much illumination passes through said first portion of said movable polarizing code element and a first static polarizing filter oriented in a first

direction; means for detecting a second amplitude based on how much illumination passes through said first portion of said movable polarizing code element and a second static polarizing filter oriented in a second direction; means for identifying a quadrant of said movable polarizing code element based on how much illumination passes through a second portion of said movable polarizing code element, wherein said means for identifying said quadrant comprises an illumination detector; and means for determining said angular position of said movable polarizing code element using said first amplitude, second amplitude and said quadrant.

The subject matter of independent claim 17 is illustrated in at least FIGs. 3-13 and described in the specification at least in paragraphs 0020 through 0074. For example, a means for illuminating (e.g. a light source) is illustrated in FIG. 9. A means for detecting a first amplitude and a means for detecting a second amplitude are illustrated in FIG. 11 and described from page 22, line 17 to page 25, line 3. A means for identifying a quadrant and a means for determining an angular position are illustrated in FIG. 3 and described from page 6, line 1 to page 10, line 9.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

There is one issue presented for review. The issue in this appeal is whether claims 1-22 are unpatentable under 35 U.S.C. §103(a) over U.S. Patent Application

Publication No. 20050002032 A1 to Wijntjes *et al.* (hereafter *Wijntjes*) in view of U.S. Patent No. 4,958,072 to Hofler *et al.* (hereafter *Hofler*).

VII. ARGUMENT

Case Law Regarding 35 U.S.C. §103(a)

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed

invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

For example, motivation to combine prior art references may exist in the nature of the problem to be solved or the knowledge of one of ordinary skill in the art. *Ruiz v. A.B. Chance Co.*, 357 F.3d 1276, 69 USPQ2d 1690 (Fed. Cir. 2004). *National Steel Car v. Canadian Pacific Railway Ltd.*, 357 F.3d 1319, 1338, 69 USPQ2d 1641, 1656 (Fed. Cir. 2004)). In *Ruiz v. A.B. Chance Co.*, the patent claimed underpinning a slumping building foundation using a screw anchor attached to the foundation by a metal bracket. One prior art reference taught a screw anchor with a concrete bracket, and a second prior art reference disclosed a pier anchor with a metal bracket. The court found motivation to combine the references to arrive at the claimed invention in the "nature of the problem to be solved" because each reference was directed "to precisely the same problem of underpinning slumping foundations." *Id.* at 1276, 69 USPQ2d at 1690.

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would

have suggested to those of ordinary skill in the art." *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also *In re Lee*, 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002) (discussing the importance of relying on objective evidence and making specific factual findings with respect to the motivation to combine references); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). For a proper rejection under 35 U.S.C. §103(a), a combination of references must expressly or impliedly suggest all of the features of the claimed invention, *i.e.*, all of the features cited in the claims at issue. *In re Gorman*, 933 F.2d 982, 18 USPQ 1885 (Fed. Cir. 1991). Hindsight reconstruction is impermissible. *See, e.g., Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 19 USPQ2d 1111 (Fed. Cir. 1991). Further, "[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." *In re Fritch*, 972 F.2d 1260, 1266, 23 U.S.P.Q.2d 1780 (Fed Cir. 1992).

Indeed, it is well settled law that in order to properly support an obviousness rejection under 35 U.S.C. §103(a), there must have been some teaching in the prior art to suggest to one of ordinary skill in the art to combine the cited references to arrive at the claimed invention. *W. L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1551 (Fed. Cir. 1983). More significantly,

> [t]he consistent criteria for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this [invention] should be carried out and would have a reasonable likelihood of success, viewed in light of the prior art.... Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure... In determining whether such a suggestion can fairly be gleaned from the prior art, the full field of the invention must be considered; for the person of ordinary skill in the art is charged with knowledge of the entire body of technological literature, including that which might lead away from the claimed invention.

(*Emphasis added*) *In re Dow Chemical Co.*, 837 F.2d 469, 473 (Fed. Cir. 1988).

In this regard, Applicants note that there must not only be a suggestion to combine the functional or operational aspects of the combined references, but that the Federal Circuit also requires the prior art to suggest *both* the combination of elements *and* the structure resulting from the combination. *Stiftung v. Renishaw PLC*, 945 F.2d 1173 (Fed. Cir. 1991). Further, the purpose of the invention to which references are applied cannot be ignored. Instead, the determination of obviousness requires recognition of the problems solved by the cited art, in comparison to the problem solved by the invention as a whole. *In re Wright*, 848 F.2d 1216 (Fed. Cir. 1988).

The Supreme Court's decision in *KSR Int'l. Co. v. Teleflex, Inc.*, 550 U.S. ____ (2007); No. 04-1350 (U.S. Apr. 30, 2007) (http://www.supremecourtus.gov/opinions/06pdf/04-1350.pdf) did not alter the fundamental principles of obviousness. In *KSR*, the Supreme Court ruled that the factors outlined in *Graham v. John Deere Co.*, 383 U.S. 1 (1966) "continue to define

the inquiry that controls [the determination of obviousness]." The *Graham* factors include: 1) the scope and content of the prior art; 2) the skill level of a person of ordinary skill in the art; 3) the differences between the claimed invention and the prior art's teachings; and 4) any objective indications of nonobviousness.

Therefore, to sustain an obviousness rejection based upon a combination of any two or more prior art references, the prior art must show all the claimed elements and features; the prior art or the knowledge of one of ordinary skill in the art must properly suggest the desirability of combining the particular elements in light of the problems solved by the cited art; and the statement of the rejection must rely on objective evidence and make specific factual findings with respect to the motivation to combine references.

Preliminary Comments Relevant to All Claim Rejections

Applicants respectfully disagree with and appeal the Final Office Action rejection. The Office has failed to meet the initial burden of establishing a *prima facie* case of obviousness of the Applicants' claims for at least three separate and distinct reasons, each of which separately establish that Applicants' claimed inventions are patentable over the proposed combination.

First, the Examiner's rationale in support of obviousness is legally deficient for at least the reason that the proposed combination fails to suggest expressly or impliedly

the claimed inventions as the cited references do not disclose, teach or suggest all claimed elements or features.

Second, the Examiner's rationale in support of obviousness is legally deficient for at least the separate and distinct reason that the cited references teach away from Applicants' claimed systems and methods. Thus, the Examiner's rationale is counter to well-established legal precedent, which indicates that references do not render a claimed invention obvious when the references teach away from an Applicants' claimed invention(s).

Third, the Examiner's rationale in support of obviousness is legally deficient for at least the reason that the skill level of a person of ordinary skill in the art is not addressed.

A. Proposed Combination Fails to Disclose All Claimed Elements

Each of the claim rejections is based on the proposed combination of *Wijntjes* and *Hofler*. The combination (assuming *arguendo* that the combination is proper) of *Wijntjes* and *Hofler* fails to disclose, teach, or suggest all elements and features of Applicants' independent claims. For example, Applicants' independent claim 1 recites "the first determination module responsive to light that is directed at and unaltered before encountering the moveable polarizing code element and thereafter unaltered before encountering a third illumination detector." The proposed combination does not

disclose, teach or suggest at least this feature. Independent claim 9 includes "an illumination source arranged such that emitted light is directed at and unaltered before encountering a third illumination detector." The proposed combination does not disclose, teach or suggest at least this feature. In addition, independent claim 17 includes "means for illuminating comprising an illumination source such that emitted light is directed at an unaltered before encountering a third illumination detector." At least this feature is not disclosed, taught or suggested by the proposed combination.

Accordingly, for at least the reason that the proposed combination fails to disclose, teach, or suggest each element and feature of Applicants' claims 1-22, the rejection of claims 1-22 should be overturned.

B. Proposed Combination Is Improper – Cited References Teach Away from Applicants' Claims

The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art, and all teachings in the prior art must be considered to the extent that they are in analogous arts. *In re Young*, 927 F.2d 588, 18 USPQ2d 1089 (Fed. Cir. 1991).

Wijntjes teaches an optical system that alters a light path after the light has passed through a rotating polarizing wheel and before the light encounters a photodetector. The altered light paths, such as those taught by *Wijntjes*, do not disclose,

teach or suggest the claimed first determination module that is responsive to a single illumination source that emits light that is directed at and unaltered before encountering the movable polarizing code element and thereafter unaltered before encountering a third illumination detector.

Also in contrast with Applicants' claimed polaroid encoder system, *Hofler* shows a light source 22 that encounters coupler 23, coupler 24, demux 26, and coupler 28 before the emitted light encounters code wheel 52. A light path that includes couplers and a demux alters the emitted light before the light encounters the code wheel. Altered light paths, such as those taught by *Hofler*, do not disclose, teach or suggest Applicants' claimed first determination module that is responsive to a single illumination source that emits light that is directed at and unaltered before encountering the movable polarizing code element and thereafter unaltered before encountering a third illumination detector.

Accordingly, the proposed combination does not teach or suggest all claim limitations. Furthermore, the proposed combination does not lead one of ordinary skill in the art to produce Applicants' claimed polaroid encoder system for at least the reason that both *Wijntjes* and *Hofler* teach away from Applicants' claimed first determination module. As shown above, both *Wijntjes* and *Hofler* teach the use of altered light paths (before and after a movable polarizing code element, whereas Applicants' claimed

system does not require fixed, reflective or transmissive polarizers, couplers and a demux) to adjust the light path before encountering an illumination detector.

Accordingly, for this separate and distinct reason, the Office Action rejections of claims 1-22 are legally deficient and the rejections set forth in the Office Action should be overturned.

C. Proposed Combination Is Improper – Skill Level of a Person of Ordinary Skill in the Art is Not Addressed

In accordance with the second *Graham* factor and as confirmed in *KSR*, the knowledge possessed by a person having ordinary skill in the art should be analyzed when making a determination of obviousness. Furthermore, in accordance with *In re Lee*, which discussed the importance of making specific factual findings with respect to the motivation to combine references, the specific factual findings should be made part of the file history of an application. The claim rejections fail to meet these requirements. The statement of the rejection of claims 1-22 fails to address the skill level of a person of ordinary skill in the art at the time Applicants' patent application was filed.

In finally rejecting Applicants' claims 1-22, the Office Action concludes, absent any statement of facts or analysis regarding the skill level of a person of ordinary skill in the art, "[i]t would have been obvious to one of ordinary skill in the art at the time of

the invention was made to modify the polarizing element of Wijntjes by placing the codes in contact with each other as taught by Hofler in order to reduce the minimum size of the code element, allowing for a more compact system." The remaining portions of the Office Action are entirely silent regarding any discussion of the skill level of a person of ordinary skill in the art.

According to *KSR*, the Examiner should not only identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does, the Examiner should include a detailed explanation of the effects of demands known to the design community or known in the marketplace and the "background knowledge possessed by a person having ordinary skill in the art." *KSR*, 550 U.S. _____ (2007); Opinion at p. 14. In accordance with *In re Kahn*, this analysis should be made explicit to facilitate review. *See In re Kahn*, 441 F. 3d 977, 988 (CA Fed. 2006). A conclusory statement indicating what would have been obvious to one of ordinary skill in the art at the time the invention was made fails to provide any statement of facts and analysis regarding the skill level of a person of ordinary skill in the art. Accordingly, for this separate and distinct reason, the Office Action rejections of claims 1-22 are legally deficient and the rejections set forth in the Office Action should be overturned.

1. Claims 1-8

Applicants' independent claim 1, includes at least

> "a first determination module to identify a quadrant of said movable polarizing code element based on how much illumination passes through a second portion of said movable polarizing code element, the first determination module responsive to a single illumination source that emits light that is directed at and unaltered before encountering the movable polarizing code element *and thereafter unaltered before encountering a third illumination detector*." (Emphasis added.)

At least this element is not disclosed, taught or suggested by the proposed combination.

In this regard, the Office Action points to element 802A in FIG. 16A of *Wijntjes* as teaching a determination module. The Office Action alleges, "light detected by 802A does not pass through analyzers 116." The Office Action further points to paragraph 108 in support of the position that "*Wijntjes* discloses a separate detector that detects light unaltered by the analyzer (116)." (See Office Action, mailed May 24, 2007, page 8.) Applicants respectfully disagree.

Applicants respectfully submit that the Office Action has misinterpreted *Wijntjes* because the Office Action has apparently considered the block diagram of the electronic subsystem out of context from the entirety of the optical polarization angle encoder. The system disclosed in *Wijnjtes* includes an optical subsystem and an

electronic subsystem. The optical polarization angle encoder is rendered inoperative if one of the optical and the electronic subsystems are disabled or removed. In accordance with paragraph 38 of *Wijntjes*, "FIGs. 16A and 16B are block diagrams of one example of the electronic subsystems for the system of FIG. 10A." The system illustrated in FIG. 10A as described in paragraph 31, "is [a] simplified block diagram, in accordance with another embodiment of the subject invention, a system for non-contact encoding of the angle of rotation of an object, such as a polarizer." Thus, it is clear that the illustration of the example electronic subsystem in FIG. 16A must be considered in association with the system of FIG. 10A.

In this regard, FIG. 10A shows head detector 704 that includes three polarizers 116A', 116B', 116C' and three detectors 120A', 120B' and 120C'. Accordingly, the light path illustrated in FIG. 10A includes a source (LED 702), a rotating polarizing wheel (114'), the three polarizers (116A', 116B', 116C') and the three detectors (120A', 120B', 120C'). Each of the three polarizers (116A', 116B', 116C') alter incident light that traverses the rotating polarizing wheel before the light reaches each of the respective detectors (120A', 120B', 120C'). Thus, *Wijntjes* teaches an optical system that alters a light path after the light has passed through a rotating polarizing wheel and before the light encounters a photodetector. The altered light paths, such as those taught by *Wijntjes*, do not disclose, teach or suggest the claimed first determination module that is responsive to a single illumination source that emits light

that is directed at and unaltered before encountering the movable polarizing code element and thereafter unaltered before encountering a third illumination detector.

Also in contrast with Applicants' claimed polaroid encoder system, *Hofler* shows a light source 22 that encounters coupler 23, coupler 24, demux 26, and coupler 28 before the emitted light encounters code wheel 52. A light path that includes couplers and a demux alters the emitted light before the light encounters the code wheel. Altered light paths, such as those taught by *Hofler*, do not disclose, teach or suggest Applicants' claimed first determination module that is responsive to a single illumination source that emits light that is directed at and unaltered before encountering the movable polarizing code element and thereafter unaltered before encountering a third illumination detector.

Accordingly, the proposed combination does not teach or suggest all claim limitations. Furthermore, the proposed combination does not lead one of ordinary skill in the art to produce Applicants' claimed polaroid encoder system for at least the reason that both *Wijntjes* and *Hofler* teach away from Applicants' claimed first determination module. As shown above, both *Wijntjes* and *Hofler* teach the use of altered light paths (before and after a movable polarizing code element, whereas Applicants' claimed system does not require fixed, reflective or transmissive polarizers, couplers and a demux) to adjust the light path before encountering an illumination detector.

Thus, the proposed combination fails to disclose, teach or suggest Applicants' claimed system, which includes at least

> "a first determination module to identify a quadrant of said movable polarizing code element based on how much illumination passes through a second portion of said movable polarizing code element, the first determination module responsive to a single illumination source that emits light that is directed at and unaltered before encountering the movable polarizing code element and thereafter unaltered before encountering a third illumination detector."

As a result, the proposed combination fails to establish a *prima facie* case of obviousness with respect to Applicants' amended claim 1. Consequently, Applicants' claim 1 is allowable over the proposed combination and the rejection of claim 1 under 35 U.S.C. § 103(a) should be overturned.

For at least the reason that claims 2-8 depend directly or indirectly from claim 1 and include all the features of independent claim 1, the rejection of claims 2-8 under 35 U.S.C. § 103(a) should also be overturned. *See In re Fine, supra*.

2. Claims 9-16

Applicants' independent claim 9, as amended, includes at least "an illumination source arranged such that emitted light is directed at and unaltered before encountering the movable polarizing code element and thereafter unaltered before encountering a

third illumination detector." At least this feature of the illuminating step is not disclosed, taught or suggested by the proposed combination.

In contrast with Applicants' claimed method and as described above, *Wijntjes* discloses systems that include one or more fixed polarizers interposed between a rotating polarizer and one or more light detectors. Several embodiments disclose a light path that encounters a reflective polarizer or a transmissive polarizer before the light encounters a light detector. Other embodiments, including the embodiment relied upon by the Office to support the allegation that *Wijntjes* discloses systems that do not alter light after it encounters a rotating polarizing wheel, include polarizers 116A', 116B' and 116C', which necessarily alter light before the light encounters respective detectors 120A', 120B' and 120C'.

Also in contrast with Applicants' claimed method and further described above, *Hofler* shows a light source 22 that encounters coupler 23, coupler 24, demux 26, and coupler 28 before the emitted light encounters code wheel 52. Thus, *Wijntjes* and *Hofler* teach the use of altered light paths before and after a movable polarizing code element, whereas Applicants' claimed method recites at least the feature of "an illumination source arranged such that emitted light is directed at and unaltered before encountering the movable polarizing code element and thereafter unaltered before encountering a third illumination detector." Accordingly, the proposed combination

fails to disclose, teach or suggest Applicants' claimed method which includes at least the step of

> "illuminating said movable polarizing code element comprising a first concentric code, a second concentric code and a set of quadrants, the first and second concentric codes in contact with one another over one of the quadrants of said movable polarizing code element, said illuminating comprising an illumination source such that emitted light is directed at and unaltered before encountering the movable polarizing code element and thereafter unaltered before encountering a third illumination detector."

As a result, the proposed combination fails to establish a *prima facie* case of obviousness with respect to Applicants' amended claim 9. Consequently, Applicants' claim 9 is allowable over the proposed combination and the rejection of claim 9 under 35 U.S.C. § 103(a) should be overturned.

For at least the reason that claims 10-16 depend directly or indirectly from claim 9 and include all the features of independent claim 9, the rejection of claims 10-16 under 35 U.S.C. § 103(a) should also be overturned. *See In re Fine, supra.*

3. Claims 17-22

Applicants' independent claim 17, as amended, includes at least "means for illuminating comprising an illumination source such that emitted light is directed at and unaltered before encountering the movable polarizing code element and thereafter

unaltered before encountering a third illumination detector." At least this feature is not disclosed, taught or suggested by the proposed combination.

In contrast with Applicants' claimed system and as described above, *Wijntjes* discloses a number of various systems that include one or more fixed polarizers interposed between a rotating polarizer and one or more light detectors. Several embodiments disclose a light path that encounters a reflective polarizer or a transmissive polarizer before the light encounters a light detector.

Also in contrast with Applicants' claimed method and further described above, *Hofler* shows a light source 22 that encounters coupler 23, coupler 24, demux 26, and coupler 28 before the emitted light encounters code wheel 52. Thus, *Wijntjes* and *Hofler* teach the use of altered light paths before and after a movable polarizing code element, whereas Applicants' claimed system recites at least "an illumination source such that emitted light is directed at and unaltered before encountering the movable polarizing code element and thereafter unaltered before encountering a third illumination detector." As a result, the proposed combination fails to establish a *prima facie* case of obviousness with respect to Applicants' amended claim 17. Consequently, Applicants' claim 17 is allowable over the proposed combination and the rejection of claim 17 under 35 U.S.C. § 103(a) should be overturned.

For at least the reason that claims 18-22 depend directly or indirectly from claim 17 and include all the features of independent claim 17, the rejection of claims 18-22 under 35 U.S.C. § 103(a) should also be overturned. *See In re Fine, supra.*

CONCLUSION

Based upon the foregoing discussion, Applicants respectfully request that the Examiner's final rejections of claims 1-22 be overturned and withdrawn by the Board and that the application be allowed to issue as a patent with pending claims 1-22. Any additional fee that may be due or required is authorized to be charged to Deposit Account No. 50-3479.

Respectfully submitted,

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VIII. CLAIMS APPENDIX

1. A polaroid encoder system for detecting movement, said system comprising:

a movable polarizing code element comprising a first concentric code, a second concentric code and a set of quadrants, the first and second concentric codes in contact with one another over one of the four quadrants of said movable polarizing code element;

a detector module to detect an amplitude based on how much illumination passes through a first portion of said movable polarizing code element, said detector module comprising:

a first illumination detector covered with a first static polarizing filter that is oriented in a first direction;

a second illumination detector covered with a second static polarizing filter that is oriented in a second direction;

a first determination module to identify a quadrant of said movable polarizing code element based on how much illumination passes through a second portion of said movable polarizing code element, the first determination module responsive to a single illumination source that emits light that is directed at and unaltered before encountering the movable polarizing code element and thereafter unaltered before encountering a third illumination detector; and

a second determination module coupled to receive said amplitude and said quadrant and configured to determine an angular position of said movable polarizing code element using said amplitude and said quadrant.

2. The system of Claim 1, further comprising:

a controller module coupled to receive said angular position of said movable polarizing code element, wherein said controller module uses said angular position to control a movable device coupled with said movable polarizing code element.

3. The system of Claim 2, wherein said controller module is selected from the group consisting of a neural network controller, a fuzzy logic controller, a proportional integral derivations controller, and a motor controller.

4. The system of Claim 1, wherein said second direction is substantially perpendicular to said first direction.

5. The system of Claim 4, wherein said first illumination detector and said second illumination detector each comprise a photodiode.

6. The system of Claim 1, wherein said first and second concentric codes are substantially opaque.

7. The system of Claim 6, wherein said first and second concentric codes are located within a segment of said second portion of said movable polarizing code element.

8. The system of Claim 1, wherein said first determination module further comprises a second illumination detector located on the same side of said movable polarizing code element as said first and second illumination detectors of said detector module.

9. A method for determining angular position of a movable polarizing code element, said method comprising:

illuminating said movable polarizing code element comprising a first concentric code, a second concentric code and a set of quadrants, the first and second concentric codes in contact with one another over one of the quadrants of said movable polarizing code element, said illuminating comprising an illumination source such that emitted light is directed at and unaltered before encountering the movable polarizing code element and thereafter unaltered before encountering a third illumination detector;

detecting a first amplitude based on how much illumination passes through a first portion of said movable polarizing code element and a first static polarizing filter oriented in a first direction, said detecting said first amplitude comprises utilizing a first photodiode;

detecting a second amplitude based on how much illumination passes through said first portion of said movable polarizing code element and a second static polarizing

filter oriented in a second direction, said detecting said second amplitude comprises utilizing a second photodiode;

determining a quadrant of said movable polarizing code element based on how much illumination passes through a second portion of said movable polarizing code element, said determining said quadrant comprises utilizing a third photodiode, wherein said first, second, and third photodiodes are located on one side of said movable polarizing code element; and

determining said angular position of said movable polarizing code element using said first amplitude, second amplitude and said quadrant.

10. The method as described in Claim 9, further comprising:

utilizing said angular position to control movable apparatus coupled with said movable polarizing code element.

11. The method as described in Claim 9, wherein said first and second concentric codes are substantially opaque.

12. The method as described in Claim 11, wherein said determining said quadrant comprises utilizing said substantially opaque first and second concentric codes.

13. The method as described in Claim 12, wherein said determining said quadrant further comprises utilizing a fourth photodiode.

14. The method as described in Claim 9, wherein said first direction is substantially perpendicular to said second direction.

15. The method as described in Claim 10, wherein said utilizing said angular position to control said movable apparatus is performed by a controller module.

16. The method as described in Claim 9, wherein said controller module is selected from the group consisting of a neural network controller, a fuzzy logic controller, a proportional integral derivations controller, and a motor controller.

17. A system for determining angular position of a movable polarizing code element, said system comprising:

means for illuminating said movable polarizing code element comprising a first concentric code, a second concentric code and a set of quadrants, the first and second concentric codes in contact with one another over one of the quadrants of said movable polarizing code element, said means for illuminating comprising an illumination source such that emitted light is directed at and unaltered before encountering the movable polarizing code element and thereafter unaltered before encountering a third illumination detector;

means for detecting a first amplitude based on how much illumination passes through said first portion of said movable polarizing code element and a first static polarizing filter oriented in a first direction;

means for detecting a second amplitude based on how much illumination passes through said first portion of said movable polarizing code element and a second static polarizing filter oriented in a second direction;

means for identifying a quadrant of said movable polarizing code element based on how much illumination passes through a second portion of said movable polarizing code element, wherein said means for identifying said quadrant comprises an illumination detector; and

means for determining said angular position of said movable polarizing code element using said first amplitude, second amplitude and said quadrant.

18. The system of Claim 17, further comprising:

means for utilizing said angular position to move an apparatus coupled with said movable polarizing code element.

19. The system of Claim 17, wherein said first and second concentric codes are substantially opaque.

20. The system of Claim 19, wherein said first and second concentric codes substantially obscures illumination from being received by said illumination detector of said means for identifying said quadrant.

21. The system of Claim 17, wherein said first direction is substantially perpendicular to said second direction.

22. The system of Claim 17, wherein said means for detecting said first amplitude comprises a photodiode covered by said first static polarizing filter.

IX. EVIDENCE APPENDIX

None. That is, Applicants have submitted no evidence in support of the arguments presented on appeal.

X. RELATED PROCEEDINGS APPENDIX

Applicants submit that there are no related proceedings regarding the present application.